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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/724,730	11/28/00	GROSSMAN	P 443D1

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EXAMINER	
EINSMANN, J	
ART UNIT	**PAPER NUMBER**
1655	4

DATE MAILED: 02/09/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No.	Applicant(s)	
	09/724,730	GROSSMAN, PAUL D.	
	Examiner	Art Unit	
	Juliet C. Einsmann	1655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 11/20/00.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-12 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-12 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15)☒ Notice of References Cited (PTO-892)
16)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17)☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
18)☐ Interview Summary (PTO-413) Paper No(s). _____ .
19)☐ Notice of Informal Patent Application (PTO-152)
20)☐ Other: .

DETAILED ACTION

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

In the instant case, the claims as originally filed contained a claim improperly numbered 6.1 which followed claim 6 and proceeded claim 7. In accordance with 37 CFR 1.1.26, improperly numbered claims 6.1-25 have been renumbered 7-26. Accordingly, claims 13-26 have been cancelled as per the directions in the preliminary amendment filed 11/28/00, and claims 1-12 are pending and examined herein.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 5, and 7-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Norton *et al.* (Bioorganic & Medicinal Chemistry, Vol. 3, No. 4, pp. 437-455, 1995).

Norton *et al.* teach a binary composition comprising a target specific portion for sequence specific hybridization to a target nucleic acid, and a tag; and a mobility modifier comprising a tail and a tag complement for binding the tag (See Figure 2). Specifically, Norton *et al.* teach PNA probes labeled with staphylococcal nuclease bound to a portion of a target sequence. The

staphylococcal nuclease bound to the PNA probe is a tail which would effect the mobility of the PNA tag complement to which it is bound. The portion of the target sequence bound to the PNA tag complement is the tag and the target sequence contains additional polynucleotide sequences which are considered the sequence specific portion. It is considered an inherent property of these polynucleotides that they comprise a 3' hydroxyl group. In Figure 2A the tag portion comprises the sequence TCC, and in Figure 2C the tag portion comprises the sequence CAG.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barany *et al.* (WO 97/31256) in view of Grossman *et al.* (US 5514543).

Barany *et al.* teach compositions comprising oligonucleotide probes, each probe comprising a target-specific portion and a an addressable-array specific portion, wherein the addressable-array specific portion is a tag (p. 5, lines 16-18). Barany *et al.* further teach tag complements bound to addressable arrays (p. 6, lines 35-37).

The probes used in the methods taught by Barany *et al.* can be composed of ribonucleotides, deoxyribonucleotides, or peptide nucleotide analogues (p. 13, lines 35-39), and furthermore, prior to ligation, it is an inherent property of these probes that they comprise a 3' hydroxyl group. The tag complements used by Barany *et al.* can be either DNA or PNA (p. 35,

line 1). Barany *et al.* specifically exemplify this method wherein the tag complement comprises the sequence CAG (p. 55, Table 3, oligonucleotide 12). Barany *et al.* teach that the hybridization may be accelerated by the addition of a hybridization enhancer, such as volume exclusion or chaotropic agents (p. 23, lines 5-6).

In the compositions taught by Barany *et al.* the tag complement is bound to a solid support (p. 6, lines 35-37). Barany *et al.* do not teach compositins in which the tag complement is bound to a tail which acts as a mobility modifier.

Grossman *et al.* (US 5514543) teach compositions useful for detecting multiple sequences in a single assay. The compositions taught by Grossman *et al.* include probe elements attached to a polymer chain which imparts a distinctive electrophoretic mobility in a sieving matrix to the associated probe pair (Col. 3, lines 6-10). In one embodiment the compositions taught by Grossman *et al.* include tails made of polyethyleneoxide units (Col. 8, lines 33-34). Grossman *et al.* teach that these compositions are useful in methods to provide multiple probe-target complexes where the probe-complexes are resolved in a mobility-dependent analysis technique (Col. 2, line 66-Col. 3, line 12).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to have attached the tag complements taught by Barany *et al.* to the mobility modifiers taught by Grossman *et al.* instead of attaching the tag complements to an addressable array. The ordinary practitioner would have been motivated to make such a substitution because Grossman *et al.* expressly teaches that the use of mobility modifiers "allows a plurality of target sequences to be assayed in a single-assay format, with rapid identification of sequences according to the mobilities of different polymer chains associated with the sequence-specific

labeled probes. The polymer chains allow for separation of single and double stranded oligonucleotides, in a simple chromatography or electrophoresis method. In particular, the method allows for effective fractionation of a plurality of oligonucleotides, all of which have similar of identical sizes (Col. 22, lines 35-43)." The combination of the methods of Grossman *et al.* with those of Barany *et al.* would have provided an improved method which utilized a sensitive detection system taught by Barany *et al.* (see p. 7, lines 35-40) and a rapid identification system as taught by Grossman *et al.*

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 12-25 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-2, 4-10, 13, and 15-18 of copending Application No. 09/232000 in view of Grossman *et al.* (US 5514543).

The claims of the co-pending application are drawn to broad compositions than the instantly claimed invention. The co-pending claims do not specifically teach compositions in which the label is a mobility modifier.

Grossman *et al.* (US 5514543) teach compositions useful for detecting multiple sequences in a single assay. The compositions taught by Grossman *et al.* include probe elements attached to a polymer chain which imparts a distinctive electrophoretic mobility in a sieving matrix to the associated probe pair (Col. 3, lines 6-10). In one embodiment the compositions taught by Grossman *et al.* include tails made of polyethyleneoxide units (Col. 8, lines 33-34). Grossman *et al.* teach that these compositions are useful in methods to provide multiple probe-target complexes where the probe-complexes are resolved in a mobility-dependent analysis technique (Col. 2, line 66-Col. 3, line 12).

Grossman *et al.* further teach labels attached to probes (See for example, Col. 9, lines 60-65).

It would have been *prima facie* obvious to one of ordinary skill in the art at the time the invention was made to have combined the methods claimed in the instant application with the mobility modifiers taught by Grossman *et al.* instead of attaching the tag complements to an addressable array. The ordinary practitioner would have been motivated to make such a substitution because Grossman *et al.* expressly teaches that the use of mobility modifiers "allows a plurality of target sequences to be assayed in a single-assay format, with rapid identification of sequences according to the mobilities of different polymer chains associated with the sequence-specific labeled probes. The polymer chains allow for separation of single and double stranded oligonucleotides, in a simple chromatography or electrophoresis method. In particular, the method allows for effective fractionation of a plurality of oligonucleotides, all of which have similar of identical sizes (Col. 22, lines 35-43)." The combination of the methods of Grossman *et al.* with those of Barany *et al.* would have provided an improved method which utilized a

sensitive detection system taught by Barany *et al.* (see p. 7, lines 35-40) and a rapid identification system as taught by Grossman *et al.*

This is a provisional obviousness-type double patenting rejection.

Conclusion

8. No claims are allowed.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juliet C. Einsmann whose telephone number is (703) 306-5824. The examiner can normally be reached on Monday through Thursday, 7:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, W. Gary Jones can be reached on (703) 308-1152. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-4242 and (703) 305-3014.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

JEFFREY FREDMAN
PRIMARY EXAMINER

Juliet C. Einsmann
Examiner
Art Unit 1655

February 8, 2001